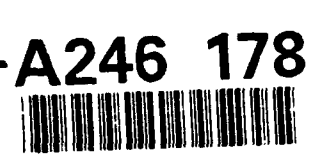

NAVAL POSTGRADUATE SCHOOL
Monterey, California

THESIS

AVIATION DEPOT LEVEL REPAIRABLE SYSTEM GAINS

by

James T. Pullen

and

Mary G. Ritchie

December 1990

Thesis Advisor: Don R. Barr

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Seven areas were identified which offer potential repairable management improvement. Recommendations are provided which would assist in

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minimizing system gains and more accurately reflect the overall value of excess material.

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Aviation Depot Level Repairable System Gains

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ABSTRACT

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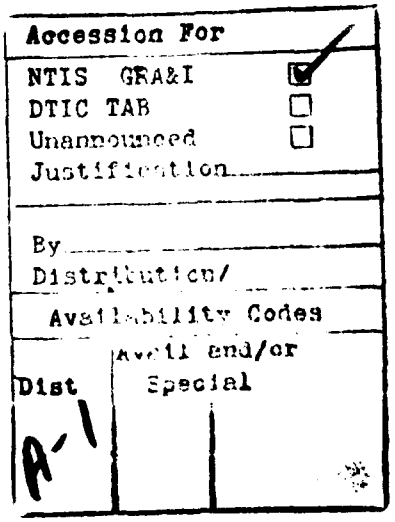

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I. INTRODUCTION

A. GENERAL

In this thesis we study causes of the significant accumulation of aviation repairable system gains in the carcass tracking system. We review interactions among the major nodes in the aviation repairable system, and suggest several changes that would help mitigate identified factors contributing to the accumulation.

With decreasing dollars to support Department of Defense Programs, there is an increasing emphasis on the management of weapon systems and their components. Aviation repairables are a growing area of attention due to their high cost. In 1989, the Aviation Supply Office (ASO) managed over 73,000 repairable line items valued at over $13 billion. To highlight the importance of this study, the accumulation of aviation repairable system gains is now over $2 billion.

In April 1985, financial management of aviation repairables was established at the Naval Supply Systems Command (NAVSUP), Washington D.C. and placed under the Navy Stock Fund. This fund is a revolving fund that finances inventory. It is reimbursed by customers when they draw on the inventory.

From this new management under the Navy Stock Fund arose significant changes and differences at all levels of aviation repairable management (field, fleet, inventory control points (ICP), and headquarters level). There is increased accountability and responsibility under the new management. The goal of one-for-one exchange (requisition a Ready for Issue (RFI) component and turn in a Not Ready for Issue (NRFI) component) has significantly improved under this new management. Improvements have been made to simplify the process for field and fleet activities and improve the overall system.

One area which presents a question is the accumulation of components returned to the system without a replacement having been requisitioned. These assets are identified as system gains, unmatched receipts, and unused carcasses.

B. PURPOSE

The purpose of this thesis is to examine the problems associated with aviation repairable system gains that are collected in the B35 file at the Inventory Control Point (ICP). We consider the following questions:

1) What are the causes of system gains and are they real gains?

2) Can the aviation repairable process be improved to provide NAVSUP and the Inventory Control Points with more accurate financial control over system gains that accumulate in the retrograde and carcass tracking files?

3) Can the aviation repairable process be improved to provide field and fleet activities with more accurate financial control of their Optar dollars?

4) Is there an impact on the Navy Stock Fund?

C. SCOPE AND LIMITATIONS

The goal of this thesis is to show a meaningful analysis of the unmatched receipts in the carcass tracking files. This analysis was restricted to aviation repairables solely to limit the repairable population. The program is the same for Navy non-aviation depot level repairables, although their Inventory Control Point is the Ships Parts Control Center.

Research in this area has been limited due to the need for simultaneous access to on-site field and fleet activities and ICP data files and information. Restrictions in this study were encountered for the same reasons. This led to further difficulty in quantifying results due to age of documents, audit trails, and data no longer available via on-line data bases.

D. ORGANIZATION

Chapter II, DESCRIPTION OF AVIATION DEPOT LEVEL REPAIRABLE TURN-IN PROCESSING PROCEDURES, provides a brief description of system gains and the carcass tracking system. Emphasis is placed on the financial implications of aviation repairable requisitioning and turn-in processing, Advanced Traceability and Control (ATAC) Hub processing, "E" versus

"C" management codes, the "B35" and "B15" programs at the Aviation Supply Office (ASO), the NALISS information system at ASO, and the PTRS, Hard Copy, and PTDE files at ASO.

Chapter III, RESEARCH METHODOLOGY, describes the study design, data sources, sampling methods and extractions used in this analysis.

Chapter IV, ANALYSIS OF SYSTEM GAINS, provides the analysis of unmatched receipts collected in the carcass tracking file at the Inventory Control Point. The receipts were extracted by the ICP using the FOCUS program. Selected receipts were analyzed at the originating activity.

Chapter V, RECOMMENDATIONS, CONCLUSIONS, AND FURTHER STUDY, summarizes key aspects of the study, provides recommendations, presents conclusions, and provides suggestions for further study.

Appendix A, GLOSSARY OF ACRONYMS AND ABBREVIATIONS, provides descriptions of key acronyms and abbreviations.

Appendix B, ANALYSIS OF MAJOR AIRCRAFT SYSTEMS CONTRIBUTION TO SYSTEM GAINS, provides a breakdown of system gains by special material identification code (SMIC).

II. DESCRIPTION OF AVIATION DEPOT LEVEL REPAIRABLE TURN-IN PROCESSING PROCEDURES

A. GENERAL

This chapter addresses current aviation repairable turn-in processing procedures. Although several different processing systems are in use (for example, SUADPS, UADPS-SP, and UADPS-LEVEL II), the discussion presented is focused on general turn-in processing procedures. We describe the financial implications of aviation repairable requisitioning and turn-in processing, ATAC Hub processing, "E" versus "C" management codes, the "B35" and "B15" programs at the Aviation Supply Office (ASO), the NALISS information system at ASO, and the PTRS, Hard Copy, and PTDE files at ASO.

B. FINANCIAL IMPLICATIONS OF AVIATION REPAIRABLE REQUISITIONING AND TURN-IN PROCESSING

When an aviation repairable component fails and a replacement is requisitioned, a "net price" financial charge is administered. This charge is a fraction of the cost of a new component, and is based on the average cost to repair like components. If an activity requisitions an aviation repairable component and fails to turn in the failed component, or the turn-in is not a like-component (for example, having the same family group code), an additional financial charge is administered. This charge, referred to

as a "carcass charge," is the difference in price between the "net price" and the cost of buying a new component, referred to as the "standard price."

C. ATAC HUB PROCESSING

When an aviation repairable component fails, it is turned in by the squadron to the supporting Aircraft Intermediate Maintenance Department (AIMD) for repair. If the AIMD is unable to repair the component, it is processed through the supporting Supply Department for shipment to the appropriate Advanced Traceability and Control (ATAC) Hub. Two major ATAC Hubs were established for this purpose, one on each coast. Each ATAC Hub provides further screening of the component, transshipment of the component to the appropriate depot level repair activity, and carcass tracking reporting of the transshipment to ASO.

D. "E" VERSUS "C" MANAGEMENT CODE

A DD1348-1 Release/Receipt Document is the form used to document the turn-in of repairable material. Card column 72 of the DD1348-1 is for a management code [Ref. 1:p. E-2]. Management code "E" is entered if the turn-in is a result of an exchange requisition. If the turn-in is not the result of an exchange requisition, management code "C" is entered to indicate turn-in as excess (for example no replacement component required) for credit determination.

E. "B35" AND "B15" PROGRAMS AT ASO

The "B35" program on ASO's computer is the Uniform Inventory Control Point (UICP) program file that collects data by document number for all aviation repairable turn-ins returned as an exchange requisition as reported to ASO by user activities. A document number, unique to each order for an aviation repairable component, consists of the activity's unit identification code (UIC), the julian date the requisition was generated, and a four-digit serial number assigned by the requisitioning activity. The document number of the turn-in should be the same as the document number of the requisition.

Documents with turn-in document identifier "D6R" or "D6A" and management code "E" are recorded in the "B35" program. The program is designed to match the turn-in to the exchange requisition document identifier "A0A" or "A4A" for the same document number within 180 days of the starting point. The starting point is the date the document is recorded in the program. Figure 1 illustrates the process.

Since all management code "E" items indicate the existence of an exchange requisition, extensive measures are taken to find matches for these documents. ASO reviews unmatched turn-in receipts on file over 180 days against unmatched exchange requisition issues in an attempt to find matches. There are two criteria for a match:

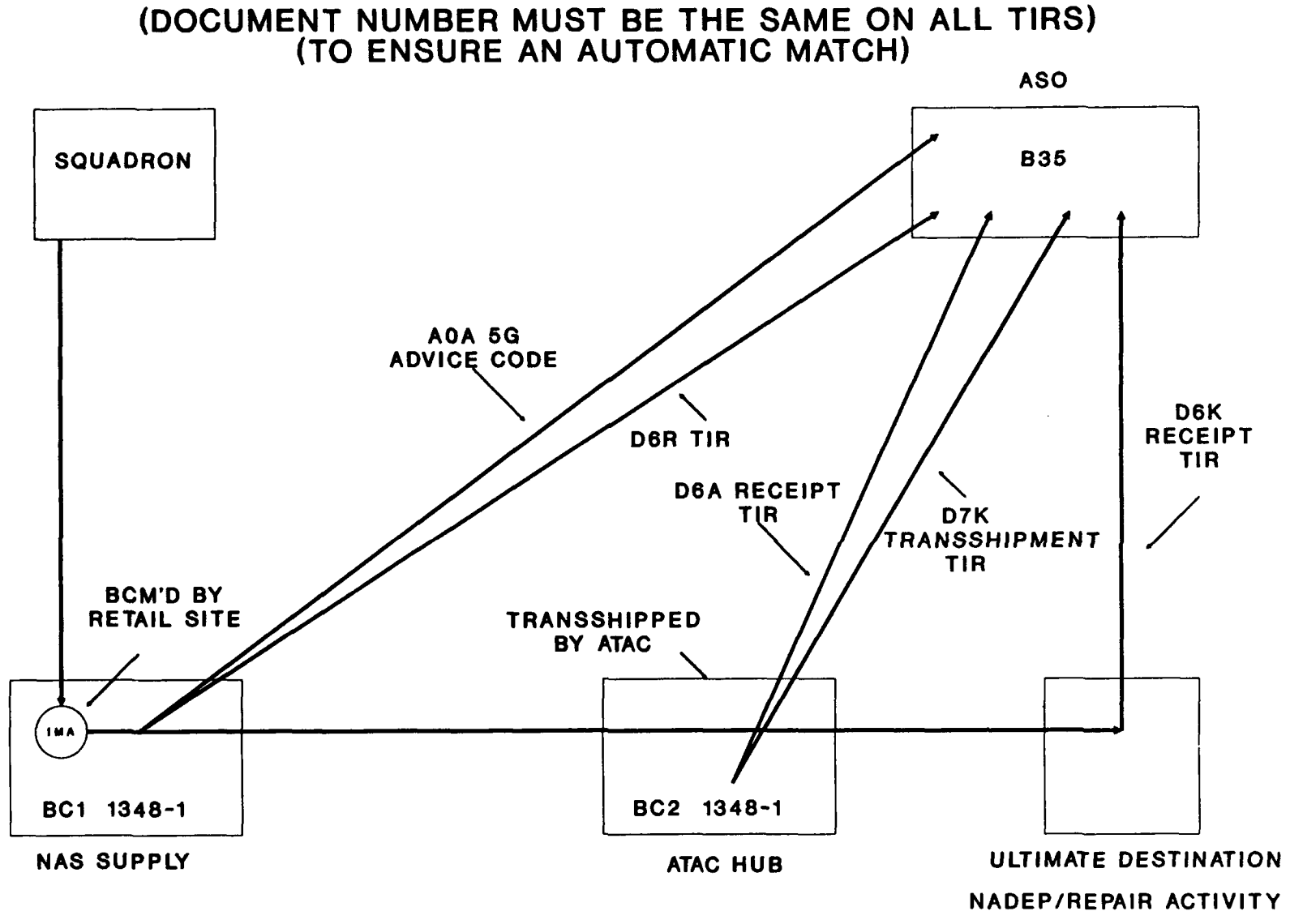

Figure 1. Flow Chart of Retrograde and Transaction Reports

1) the family group codes of each document must be the same, and

2) two-thirds of the document number must match (for example UIC and julian date, or UIC and serial number, or julian date and serial number).

After the documents have been reviewed under these criteria, one of the following occurs for each document:

1) each match found has the turn-in document number cross referenced to the exchange requisition document number, or

2) non-matching turn-in receipts have an "X" placed in the records to indicate the documents were reviewed but matches were not found.

ASO reviews these "X" coded unmatched turn-in receipts against unmatched exchange requisition issues every three months. The criterion for a match here is that only the family group code and the UIC of each document must be the same.

The "B15" program on ASO's computer is the UICP program file that collects data by document number of all aviation repairable turn-ins returned as excess. The material returns are reported to ASO by user activities for credit determination review by the UICP.

Documents with turn-in document identifier "D6R" or "D6A" and management code "C" enter the "B15" program for credit determination. Documents for aviation repairable components with pending orders at the UICP, orders which can be reduced in quantity as a result of the turn-in, are granted credit. Credit is granted to the user activity. If

no pending orders exist at the UICP for components in the same family group code as the component turned in, no credit is granted.

F. NALISS INFORMATION SYSTEM

Access by a user activity to ASO's records of the activity's unmatched receipts was not available prior to 20 February 1990. On that date, the Naval Aviation Logistics Information Support System (NALISS) at ASO became available for user activities to access all unmatched "F" condition receipts [Ref. 2:p. 2]. "F" condition receipts indicate aviation repairable components turned-in as a not ready for issue (NRFI). Accessibility to "A" condition receipts (i.e., aviation repairable components turned-in as a ready for issue (RFI)) was not granted to NALISS user activities, since these same "A" condition receipts could also be on the Other Supply Officer (OSO) Transfer File for credit.

G. PTRS, HARD COPY, AND PTDE FILES AT ASO

The PTRS file at ASO provides the status of document identifier "A0A" and "A4A" requisition documents. Activities with ASO terminals can query the PTRS file by document number to see if the item has been shipped, the requisition canceled, or any of several possible statuses (for example, back ordered or awaiting shipment). Query of the ile will indicate no record of the document number if none exists. However, if the document number exists on

ASO's file but it has been more than 90 days since the item was issued or the document was canceled (i.e., the document was completed), the file will indicate that the document number has gone to Hard Copy.

Hard Copy is microfiche records of document numbers indicating the status they had when purged from the PTRS file. Hard Copy microfiche is not routinely provided to field or fleet activities.

The PTDE file at ASO provides the status of document identifier "D6R" or "D6A" turn-in documents. Activities with ASO terminals can query the PTDE file by document number to see if the document exists on ASO's file. It will indicate if a match has been made to an exchange requisition of the same document number, or to some other document number.

III. METHODOLOGY

A. GENERAL

This chapter will address the methodology of the thesis. It provides a description of the study design, data sources, and methods for extracting the information researched.

B. DESCRIPTION OF STUDY DESIGN

Stock fund financing of aviation depot level repairables began on 1 April 1985. The issue prices of assets are revised annually after a surcharge is applied to offset the cost of operations. This includes obsolescence, inflation, inventory loss, and transportation. Beginning fiscal year 1991, operating expenses at the Inventory Control Points and the Naval Supply Centers will also be included.

The accumulation of aviation repairable system gains (unmatched receipts) from operations have not been applied to offset the cost of operations or the user's financing appropriations (which paid for the majority of them initially). This can be attributed to the lack of determination of their causes. This study is designed to determine their causes, their effect on the Navy Stock Fund, and to provide recommendations of corrections that could lessen this growing problem.

C. DATA SOURCES AND ACQUISITION

The data for this thesis were extracted from personal interviews, the transaction history files (THF) at the Aviation Supply Office, and the files of individual fleet activities. Background information on repairable retrograde management, UICP programs, and other topics was provided by personal work experience, interviews, and current Navy publications, instructions, and message traffic.

The total population of system gains for Fiscal Year 1990 as of May 1990 is provided in Table 1.

The personal interviews were conducted at two Naval Air Stations, one carrier, and via phone conversations with ASO. Selections of activities to be reviewed were based on timely accessibility and geographic proximity to the Naval Postgraduate School in Monterey, California. The activities were:

1) Naval Air Station Lemoore, California,
2) Naval Air Station Miramar, California, and
3) USS RANGER.

These activities accounted for over 2500 documents with a dollar value of over 33 million.

D. DATA SAMPLING METHODS AND EXTRACTIONS

To determine the answer to research question one (i.e., what are the causes of system gains), data were examined from individual activities and the Aviation Inventory

TABLE 1

SNAPSHOT VIEW OF FY 90 UNMATCHED RECEIPTS IN MAY 1990*
(A AND F CONDITION COMBINED)

	NBR. DOCUMENTS	DOLLAR VALUE
COMNAVAIRLANT		
SHORE ACTIVITIES	11,120	81,219,855
AFLOAT ACTIVITIES	12,817	188,092,664
TOTAL	23,937	269,312,519
COMNAVAIRPAC		
SHORE ACTIVITIES	10,768	108,655,574
AFLOAT ACTIVITIES	12,752	177,286,777
TOTAL	23,520	285,942,351
OTHER TYPE COMMANDERS	30,318	364,190,959
TOTAL SYSTEM	77,775	919,445,829

* Because these figures are a snapshot view, they are not unresolved system gains. They are available for "matching" in accordance with ASO's three month reviews.

Control Point (ASO) files. The UICP application "B35" is the Navy's baseline carcass tracking management information system which performs the following functions:

1) tracks all returns associated with exchange advice coded DLR requisitions,

2) records information from end-users, transshippers, ATAC Hubs, and repair activities (commercial and government), and

3) generates follow-ups or billings within specified time frames until the transaction is completed.

The individual activity files reviewed included personal data files, copies of DD1348-1's, Shipboard Uniform Automated Data Processing System (SUADPS) files, Uniform Inventory Control Point Automated Data Processing System (UADPS) files, and NALCOMIS Repairables Management Module (NRMM) files.

Research questions two and three address: "Can the aviation repairable process be improved to:

1) provide NAVSUP and the ICP's with better financial control of system gains that accumulate in the retrograde tracking files, and

2) provide the field and fleet activities with more accurate financial control of their OPTAR dollars?"

The data used for research question one were examined further in addressing these questions. Individual activities procedures were also reviewed to identify procedural problems.

Research question four addresses the overall impact on the Navy Stock Fund. This question was first approached

from the viewpoint that most of these gains were obsolescent aircraft components. ASO provided a summary listing of FY 90 unmatched receipts by Special Material Identification Code (SMIC). This listing was reviewed by aircraft type to provide our analysis in APPENDIX B. A summary of APPENDIX B is presented in Table 2, Chapter IV.

Additionally, we reviewed the overall impact on the Navy Stock Fund from the contention that most of these gains should be used to counterbalance system losses. Since the unmatched receipts have already been reviewed in the ASO programs to find compatible matches, a one-for-one match analysis has already been attempted. A counterbalance could be done on dollar value only, not asset for asset.

Finally, we reviewed the overall impact from the contention that the dollar value of these gains should be distributed among field and fleet activities. Since access to the receipts via computer terminal is now available to most commands, field activities can use these on a one-for-one exchange basis.

The results of our analyses are presented in Chapter IV. We believe they are representative of the population we reviewed. This information provides several critical factors that contribute to the overall high dollar value of unmatched receipts.

IV. ANALYSIS OF SYSTEM GAINS

A. GENERAL

This chapter will focus on the analysis of system gains, addressing each of the questions identified in paragraph I.B.

B. WHAT ARE THE CAUSES OF SYSTEM GAINS AND ARE THEY REAL GAINS?

Several causes of system gains were identified.

1. Turn-in of Unneeded or Obsolete Aircraft Repairables

One of the most significant contributors to system gains is a result of the turn-in of repairable spares and installed items associated with weapons systems which were modernized by replacement or upgrade. These repairables may be from aircraft where the active flying inventory was reduced (for example, the F4 and A7) or that were replaced by newer aircraft. Other sources are from aircraft systems made obsolete through weapons system upgrades in newer aircraft (for example, systems in the F/A18 and the F14). Personnel at field activities realize, as is delineated in paragraph II.E., that no credit is likely to be granted for the turn-in of these unneeded or obsolete repairables. They also realize that turn-ins made now may prevent carcass charges for future requisitions, if coded as an exchange.

Thus, the incentive of preventing a carcass charge leads to the use of an "E" vice a "C" management code, even though the "C" management code is required by instruction [Ref. 1:p. E-2]. The "E" management code turn-in, with no matching exchange requisition issue, results in a system gain. The high dollar value of the F4 and A7 aircraft on Table 2, derived by special material identification codes (SMIC), indicates that this is a significant contributor to system gains.

These turn-ins are real gains in the sense that repairables were turned in when no matching exchange requisition issues were made. However, if these turn-ins had been done properly with a "C" management code, none of them would have appeared on the records as system gains.

2. Repairable Material Screening at the ATAC Hub

A second cause of system gains is the result of repairable material being misidentified by personnel at the ATAC Hub. If personnel at the ATAC Hub screen material and determine that it is not properly identified, they are required to report such finding via a Report of Discrepancy (ROD) [Ref. 3]. They are also required to report (to the ICP) transshipment of the repairable turn-in (as they have identified it) to the depot level repair activity. Personnel at the ICP send a message to the field or fleet activity reporting the ATAC Hub ROD findings and requesting

TABLE 2

SUMMARY OF
TOP 14 AIRCRAFT SYSTEMS
CONTRIBUTING TO SYSTEM GAINS

SYSTEM	NBR OF DOCUMENTS	DOLLAR VALUE
F/A18	3,992	97,888,699
F14	3,808	90,247,569
A6	3,274	73,696,329
P3	10,333	57,844,983
AV8	1,439	45,989,998
S3	2,527	45,210,846
J52	1,788	42,490,100
EA6	1,632	38,591,870
H53	2,944	35,501,939
F4	2,832	34,038,228
A7	3,243	32,822,815
H46	3,049	32,331,052
C2/E2	1,849	29,369,583
GFE	5,696	26,423,459

the field or fleet activity research its records and update them as required.

Current policy is that if all supporting documentation at the field or fleet activity indicates the turn-in was correct as originally reported, the ATAC Hub ROD findings are not challengeable. The field or fleet activity's only recourse is to find someone at the ATAC Hub or depot level repair activity who can locate the repairable material, correctly identify it, and report such finding to the ICP.

An ATAC Hub ROD finding that is the result of repairable material being misidentified by personnel at the Hub results in a carcass charge to the field or fleet activity and a system gain on the ICP's records. This cause of system gains and carcass charges is the one that most frustrates personnel at field and fleet activities. The reason is field and fleet activities have personnel who are technical experts on the repairable material being turned in, compared to the transshipment processing personnel at the ATAC Hub who have limited or no technical expertise on the repairable material.

It is very easy to mistakenly use a subassembly replacement assembly (SRA) part number to identify the material instead of the weapons replacement assembly (WRA) part number if one does not know the equipment. For example, the name plate on the F14 converter assembly (NSN 5821-01-161-8441) is the name plate for its next higher assembly (camera assembly NSN 5821-01-125-0015). The part

number for the converter assembly is stamped into the assembly. It is recognized that material identification in this instance requires an expert. The incorrect identification of this item by personnel at the ATAC Hub has resulted in numerous erroneous ROD's. This is a continuing problem even though F14 activities have communicated the above information to the ATAC Hub and ASO on several occasions.

These turn-ins are not real system gains in the cases where ATAC Hub screens result in misidentified repairable material; they are paper gains only. The actual repairable material turn-in is a different item from what the ICP records have on file as the turn-in.

3. Computer System Defaults to "E" Management Code

To turn an excess "A" condition asset in for credit determination, a "C" is required in two card columns (cc):

1) management code (cc72) of the DD1348-1, and

2) DLR Exchange Indicator (cc70) of the Application Bravo Enhanced Programs updated for UADPS.

If either card column is not filled in, the system is designed to default to an "E." An "E" in either column will place it in the carcass tracking file for exchange, not the B15 program for credit determination.

After review of the "A" condition listing at one activity, it was discovered that over one-half of these assets on the system gain listing were intended to be turned

in for credit determination. However, due to the computer system defaulting to "E," there was no credit determination made at the ICP, no credit provided to the activity, and unresolved system gains were created.

4. Budget Constraints Affecting Reorder Timing Policy

Reorder timing problems are created as a result of the ICP time frame to review unmatched receipts. This time frame was set, after discussions with the type commanders, at 180 days from the date of receipt to ASO's carcass tracking file. It was selected as a tradeoff between:

1) allowing the activities to use their own returned carcasses, and

2) to make matches to reverse bills and provide dollars back to the activities.

As a fiscal year nears the end, operating dollars become more and more constrained. Cancellation of documents on order for less critically required repairables is one way to recoup money for the requisitioning of more critically required RFI replacements for NRFI repairables. If additional funding does not become available, the reorder requisitions for the canceled repairables are delayed until the next fiscal year when new operating dollars are granted. For Fiscal Year 1990 this selective screening began as early as May at the air stations we visited.

If a requisition is canceled in May 1990, with plans to reorder in the next fiscal year, the time frame of 180 days could have already passed by the time of cancellation.

This could result in the carcass being matched by the system to another document. For example, if the original document was ordered in October of 1989 and its original receipt date to the ICP files was the same month, the time frame of 180 days has passed by May 1990. This causes two problems:

1) the system now recognizes this as a system gain, and

2) the system could match this turn-in to another document before the activity submits a reorder requisition.

In this case, the activity loses control of the turn-in and the dollar value for the return to the system.

5. "A" Condition (RFI) Accessibility for NALISS Users

Many "A" condition turn-ins made by several activities were believed to be coded with a "C" that computer systems had defaulted to an "E," as noted above. Since user activities do not have access to "A" condition records via NALISS, personnel at each activity have no knowledge of the extent of the number and dollar value of the system gains that result. The "A" condition records reviewed for this study with the activities resulted in the identification of the system default problem. Access to "A" condition records for NALISS users could have identified this problem to them much sooner.

6. System Gains Resulting from Unrecorded System Issues

In review of an activity's listings, it was discovered that occasionally the local activity had recorded a system issue and receipt of material against an alleged

system gain. This issue was not posted to the carcass tracking file. Further research of the PTRS status indicated that the record had purged to Hard Copy. Since the activity did not have Hard Copy microfiche available, the status at time of purge could not be verified. Research by personnel at the activity verified the issue from the system and receipt of the material.

Personnel at both naval air stations we visited cited system issues for system gain document numbers. These personnel stated they believe the cause to be a problem with the transaction item reports (TIR) reporting system. This problem could be attributed to TIR's from on-line activities, off-line systems, or other contractor reporting systems not being properly recorded in ASO's files.

In Table 2 the leading aircraft system for system gains is the F/A18. Issues for the F/A18 are made via a Disk Oriented Supply System (DOSS). This is an off-line system which provides the TIR's of F/A18 issues to the ICP files.

All contractors are still not required to provide automated TIR information to the ICP. Without automated TIR information to the ICP, the possibility of errors and missed TIR's increases. The carcass tracking file directly receives TIR information of retrograde movement from user activities, but does not directly receive reporting of

issues made by contractors. Issues made but not posted to the carcass tracking file result in system gains.

This not only inflates the system gains, but decreases the Navy Stock Fund if these receipts are used to reverse valid activity bills.

C. RECOMMENDATIONS TO IMPROVE FINANCIAL CONTROL OF SYSTEM GAINS

Can the aviation repairable process be improved to provide NAVSUP and the Inventory Control Points with more accurate financial control over system gains that accumulate in the retrograde and carcass tracking files? Three potential improvements were identified.

1. Remove the Incentive for Using "E" Vice "C" Management Code

The first potential improvement involves removing the incentive for user activities to use "E" vice "C" management codes when turning in unneeded or obsolete repairable material. As evidenced by the high dollar value figures for unneeded or obsolete aircraft systems (for example, F4 and A7) in Table 2, requiring "C" management code by instruction is not enough. An incentive should be provided to the activities to correctly identify the material as excess turn-ins. The incentive now is to possibly reduce future carcass charges by turning this material in as exchange turn-ins using "E" management code.

2. Review ATAC Hub Processing Procedures

A second potential improvement in the aviation repairable process involves changing ATAC Hub processing procedures. The correct identification of repairable material is essential to maintaining accurate financial control of inventory and system gains. The identification and verification of many of these systems is limited to the repairable technical experts, who routinely maintain and work with the different systems. These personnel are stationed at the repair facilities, air stations, other field activities, and on board ships. More reliance on their technical expertise would greatly enhance this effort.

ATAC Hub ROD processing procedures do not follow standard ROD processing procedures used for all other supply transactions by other Navy activities. Normal ROD processing procedures require RODs be sent to the issuing activity for resolution, and also require that the material in question be held in suspense pending ROD resolution.

Current ATAC Hub ROD processing procedures significantly reduce the part field and fleet technical experts can play in resolving discrepancies. ROD's generated by the ATAC Hub are sent to the ICP for action, and to the field and fleet activity for information only. In addition, the material is not retained at the ATAC Hub pending ROD resolution, but is transshipped to the depot level repair activity. This greatly complicates ROD

resolution, since it creates a situation where none of the players involved can physically put their hands on the material.

3. Review PTRS and Hard Copy File Policies and Accessibility at ASO

Carcass tracking personnel at field and fleet activities can gain valuable information from ASO's PTRS status file when researching system gains. A turn-in document number that has a matching exchange requisition document number with cancellation status in the PTRS file is readily recognized as a system gain, as long as the canceled document number has not been reordered. However, researching documents of this nature becomes much more cumbersome if the PTRS file indicates that the document number has gone to Hard Copy.

Hard Copy microfiche is not systematically provided to field and fleet activities. Hard Copy access by carcass tracking personnel at all field and fleet activities would contribute to research of discrepancies and therefore more accurate financial control over system gains.

Current policy is to purge document numbers from the PTRS status file to Hard Copy if it has been more than 90 days since the item was issued or the document canceled (i.e., the document was completed). This policy results in many documents going to Hard Copy before carcass tracking inquiries are received by field or fleet activities.

D. RECOMMENDATIONS TO IMPROVE FINANCIAL CONTROL OF OPTAR DOLLARS

Can the aviation repairable process be improved to provide field and fleet activities with more accurate financial control of their Optar dollars? Three potential improvements were identified.

1. Utilize Repairable Material Technical Experts of Field and Fleet Activities

The first potential improvement involves utilizing the repairable material technical experts of field and fleet activities to prevent carcass charges which deplete Optar dollars. ATAC Hub screens by non-technical personnel that result in misidentified material lead to carcass charges and reduced Optar dollars for field and fleet activities.

2. Review the Policy Concerning Accessibility of "A" Condition Receipts by NALISS User Activities

A second potential improvement in the aviation repairable process involves reviewing the policy concerning accessibility of "A" condition receipts by NALISS user activities. Currently "A" condition receipts are not readily available to user activities. However, personnel at every activity visited were extremely interested when they found out that turn-ins which they believed were being considered for credit determination had ended up in the system gains file, and as such were not subject to review for credit determination.

Once made aware of this fact, personnel discovered errors made in the original transmissions (for example, if "C" management code is not entered, the computer defaults to "E" management code) that they could correct. They could also strive to prevent the same mistake in future transmissions. These personnel have attempted to correct the erroneous transmissions and resubmit them, hopeful of receiving some credit which will increase Optar dollars available.

3. Utilize PTRS and Hard Copy File Status

A third potential improvement in the aviation repairable process involves reviewing the PTRS and Hard Copy file policies and accessibility at ASO. For the reasons addressed in paragraph IV.C.3., improved accessibility to PTRS and Hard Copy status for carcass tracking personnel at all field and fleet activities would contribute to improved financial control of their Optar dollars.

E. IS THERE AN IMPACT ON THE NAVY STOCK FUND?

Access to ICP carcass tracking information via NALISS has provided both negative and positive results. Identification and correction of system problems has been improved through activity access. However, turn-in documents which were subsequently changed and reported to the ICP as a different document number (for example, a transposition error) have resulted in system losses. In

cases such as these, transposition errors result in system gains under the erroneous document numbers and system losses under the actual field or fleet activity document numbers.

In some instances these erroneously created documents (system gains) have been utilized as an excess turn-in receipt to prevent a carcass charge for the same family group code item against a different document number. This results in the Stock Fund taking two losses:

1) for a "transportation loss" that resulted when a depot level repair activity did not report receipt of a turn-in under the same document number as the field or fleet activity, and

2) for a "carcass charge loss" that resulted when a turn-in document was used a second time on a different document, in lieu of turning in an NRFI component. This was done even though it was understood to be a paper carcass system gain.

At this time there has not been a decision of what to do with the unresolved system gains after the attempted matches against all feasible exchange documents and system losses. However, there are currently at least three impacts on the Navy Stock Fund.

First is the impact caused by obsolescent repairables which are turned-in to the Navy Stock Fund at full value. As noted in paragraph IV.B.1., these unneeded or obsolete aircraft repairables are actually worth only a fraction of their full value. This inflates the dollar value of the Navy Stock Fund.

Second is the impact on the Stock Fund of system losses and increased operating expenses that are reflected in annual price revisions of aviation repairables. These decrease the dollar value of the Navy Stock Fund.

Third is the impact on the Stock Fund of system gains that should have been excess turn-ins, as noted in paragraph IV.B.3. In this case the Stock Fund is increased by the value of the credit that is not given because no credit determination is made.

V. RECOMMENDATIONS, CONCLUSIONS, AND FURTHER STUDY

A. GENERAL

This chapter will address recommendations for improving the validity of transactions which result in system gains. In addition we present conclusions drawn from the analyses made during the preparation of this thesis, and make recommendations for further study.

A significant number of the gains that could be clearly traced were determined to be erroneous. Improvements are suggested that can be implemented with changes to:

1) current policies and procedures,
2) computer programs,
3) accessibility of computer information and microfiche, and
4) desk top procedures.

B. TURN-IN OF UNNEEDED OR OBSOLETE AIRCRAFT AND SHIP REPAIRABLES

Unneeded or obsolete aircraft and ship repairables consist of components which have failed and been repaired many times over during the life cycle of the equipment, but are now at the end of useful service life. Current pricing policy requires these repairables be valued on the books at or near full price. This results in greatly inflated inventory values when ship, aircraft, or aircraft system

repairables are retired from useful service. It also results in greatly inflated system gains when the incentive is to turn them in with an "E" management code to prevent carcass charges.

A solution to this problem lies in the turn-in procedure and accompanying incentive when this material is being processed for turn-in. Two key factors would greatly improve the turn-in procedure. First, this material should be valued at either its salvage value or market value, depending on whether a foreign military sales market exists. Second, a third management code of "S" should be implemented to identify these repairables as being turned in for salvage at the end of useful service life. These turn-in document numbers should be captured in a separate file from the "E" and "C" management code turn-ins. These turn-ins should also be available for matching to exchange requisition issues, since the carcass tracking system should not deplete Optar dollars through carcass charges when a turn-in is made. Implementing these recommendations would reduce the incentive for user activities to use "E" management code to prevent carcass charges.

C. REPAIRABLE MATERIAL SCREENED AT THE ATAC HUB

Technical experts on repairable material are stationed at field and fleet activities and repair facilities. The expertise of these individuals should be relied upon,

especially when it is the field or fleet activity that is assessed a carcass charge if an ATAC Hub ROD finding is the result of misidentified material.

With repairable turn-in information (VIDS/MAF and shipping documentation) at user activities, it is possible to trace most repairable items in question by part number and serial number. The ATAC Hub should be required to resolve discrepancies with the field or fleet activity prior to transshipment of the item to the depot level repair activity. Many discrepancies could easily be solved by ROD correspondence between the ATAC Hub and the field or fleet activity, especially those in which a field or fleet activity misidentified an item as a different member of the same family group code. Items not solvable through ROD correspondence should be returned to the field or fleet activity for reprocessing. Since the cost of most carcass charges is several thousand dollars, we believe that even with this additional cost of shipping, this would be more cost effective.

D. ACCESSIBILITY OF "A" CONDITION RECEIPTS BY NALISS USER ACTIVITIES

NALISS user activities should be granted accessibility to "A" condition receipts. Research of "A" condition receipts of every activity we visited resulted in personnel finding turn-ins, which they believed were being considered for credit determination, that had ended up in the system

gains file. These system gains were a result of personnel not entering a "C" management code on the computer when generating the shipping documents, and not realizing that the various computers at the respective activities default to an "E" management code if nothing is entered. It is essential that this fact be emphasized to personnel at all field and fleet activities, and it is recommended that more detailed desk top procedures be required that reflect this fact.

It is also recommended that personnel at field and fleet activities be provided with "A" condition system gain receipts so they can correct these erroneous transmissions, reduce system gains, and possibly increase Optar dollars available by receiving some credit for these "A" condition turn-ins.

E. ACCESSIBILITY OF PTRS AND HARD COPY FILE STATUS BY USER ACTIVITIES

Carcass tracking sections of all field and fleet activities should be put on automatic distribution for a copy of Hard Copy status microfiche. Personnel at every activity we visited recognized the usefulness of Hard Copy status microfiche, and voiced their frustration at the lack of its accessibility. Any research requiring Hard Copy information currently requires the assistance of ASO personnel.

These same personnel believe documents were being purged to Hard Copy from the PTRS status file much too soon to obtain maximum use of the PTRS file when performing carcass tracking research. Most personnel believe 180 days from the completion date would provide sufficient time for resolution of most carcass tracking problems.

F. SYSTEM GAINS RESULTING FROM UNRECORDED SYSTEM ISSUES

A study should be conducted to determine the cause of system gains generated when system issues were made but not reflected in the carcass tracking file. The problem could be attributed to an activity TIR reporting problem, transmission difficulties, ICP updates, or error processing.

The high dollar value of system gains for the F/A18 aircraft, one of the newest aircraft in the fleet, indicates a significant problem. We believe much of this problem could be attributed to the off-line DOSS system utilized solely for F/A18 transactions.

The number of activities with direct access to the ICP is constrained by computer space on the TIR wheel. The following steps are suggested.

1) The TIR wheel should be expanded.

2) Conduct a review comparing all activities presently on the TIR wheel to those not on the TIR wheel to determine the dollar value of transactions as well as the need for accountability. This review could identify activities which represent a greater need for direct access accountability due to high dollar value, and therefore should replace some activities currently on the TIR wheel.

3) All issuing and receiving activities (including all contractors) should provide TIR's to the ICP.

G. REVIEW TIME FRAME FOR REVIEWING UNMATCHED RECEIPTS

The current time frame of 180 days creates some problems for field and fleet activities, as noted in paragraph IV.B.4., and should be reviewed and increased to 210 days. This would allow activities more time and flexibility while working with constrained budgets to adhere to the one-for-one repairable exchange policy.

H. IMPACT ON THE NAVY STOCK FUND

Four things should be done concerning the impact on the Navy Stock Fund.

First, a study should be conducted to review current procedures for reviewing system losses against system gains to see if more resolutions could be made. For example, current procedures appear to create a corresponding gain or loss when a transposition error is made.

Second, implementing the recommendations of paragraph V.B. when turning in unneeded or obsolete repairables would lessen the impact of system gains on the Navy Stock Fund.

Third, no automatic tradeoff should be made between the dollar values of system gains and losses. Rather, efforts should be continued to try to resolve both system gains and losses.

Fourth, the dollar value of system gains should not be arbitrarily distributed among field and fleet activities. Rather, documents in the system gains file intended to be excess turn-ins should be removed from the system gains file and correctly input for credit determination.

I. CONCLUSIONS

Several conclusions were drawn from our analyses.

1. Turn-in of Unneeded or Obsolete Repairables

A significant amount of the dollars of current system gains are the result of the turn-in of unneeded or obsolete repairables. The current incentive is to turn these repairables in with an "E" management code. However, if done properly by instruction with a "C" management code, none of these turn-ins would have been recorded as system gains. The recommendations presented in paragraph V.B. would remove the current incentive which results in system gains from unneeded or obsolete repairables.

2. Repairable Material Screened at the ATAC Hub

Repairable material misidentified at the ATAC Hub is believed to be a relatively small amount of the dollars of current system gains. However, as noted in paragraph IV.B.2., this cause of system gains is the one that most frustrates personnel at field and fleet activities. The recommendations presented in paragraph V.C. would reduce system gains from misidentified material, reduce carcass

charges to field and fleet activities, and also improve the morale of personnel at the field and fleet activities who are frustrated with the current procedure.

3. "A" Condition Receipts

A large portion of the dollars of current system gains were never intended to be in the system gains file. The activities we visited had different computer systems designed to default to "E" management code if none was entered. Most personnel at these activities were not aware of this fact. The recommendations presented in paragraph V.D. would enable personnel at the field and fleet activities to greatly reduce system gains from "A" condition receipts.

4. PTRS and Hard Copy File Status

The recommendations of paragraph V.E. would contribute to more accurate financial records and reduced system gains.

5. System Gains Resulting from Unrecorded System Issues

The recommendations of paragraph V.F. would contribute to reduced system gains, where significant reductions appear to be attainable.

6. Review Time Frame for Reviewing Unmatched Receipts

The recommendations of paragraph V.G. would contribute to more accurate system gains and financial records.

7. Impact on the Navy Stock Fund

As noted in paragraph IV.E., system gains impact the Navy Stock Fund in several ways. The recommendations of paragraph V.H. would contribute to more accurate financial records and a more accurate Navy Stock Fund.

J. RECOMMENDATIONS FOR FURTHER STUDY

Three areas are identified for further study:

1) Unneeded or obsolete parts: Determination of salvage value for accounting of inventory.

2) Navy Stock Fund: Impact of accumulating unresolved system gains and losses.

3) High dollar value of system gains: Analysis by aircraft type.

APPENDIX A

GLOSSARY OF ACRONYMS AND ABBREVIATIONS

"A" condition	Ready for issue
AIMD	Aircraft Intermediate Maintenance Department
A0A	Document Identification of Requisition for Domestic Shipment/with National Stock Number
ASO	Aviation Supply Office
ATAC	Advanced Traceability and Control
AVDLR	Aviation Depot Level Repairable
A4A	Document Identification of Requisition Referral
BCM	Beyond Capability of Maintenance
B15	UICP Material Returns Program
B35	UICP Carcass Tracking File
COMNAVAIRLANT	Commander, Naval Air Force, United States Atlantic Fleet
COMNAVAIRPAC	Commander, Naval Air Force, United States Pacific Fleet
CTR	Carcass Tracking Record
CTRF	Carcass Tracking Record File
DD1348	Milstrip Requisition (Form)
DD1348-1	Milstrip Release/Receipt (Form)
DLR	Depot Level Repairable
DOC ID	Document Identifier
DOD	Department of Defense

DOSS	Disk Oriented Supply System
D6A	Document Identification of Notification of Repairable Receipt
D6R	Document Identification of Notification of "Not Ready For Issue" (NRFI) Repairable Shipment
"F" Condition	Not Ready For Issue
FOCUS	Inventory Control Point Item Manager Software Support Program
FY	Fiscal Year
GFE	Government Furnished Equipment
ICP	Inventory Control Point
NALCOMIS	Naval Aviation Logistics Command Management Information System
NALISS	Naval Aviation Logistics Information Support System
NAVSUP	Naval Supply Systems Command
NRFI	Not Ready For Issue
NSF	Navy Stock Fund
NSN	National Stock Number
NRMM	NALCOMIS Repairables Management Module
OPTAR	Operating Target (Budget)
OSO	Other Supply Officer
PTDE	UICP Retrieval of Carcass Tracking Record by Document Number
PTRS	UICP Retrieval Routine for Document Issue Status
ROD	Report of Discrepancy
RFI	Ready For Issue
SMIC	Special Material Identification Code

SRA	Subassembly Replacement Assembly
SUADPS	Shipboard Uniform Automated Data Processing System
SUADPS-RT	Shipboard Uniform Automated Data Processing System-Real Time
THF	Transaction History File
TIR	Transaction Item Report
UADPS-LEVEL II	Uniform Automated Data Processing System--Level II activities
UADPS-SP	Uniform Automated Data Processing System--Stock Point
UIC	Unit Identification Code
UICP	Uniform Inventory Control Point Automated Data Processing System
VIDS/MAF	Visual Information Display System/Maintenance Action Form
WRA	Weapons Replacement Assembly

APPENDIX B

ANALYSIS OF
MAJOR AIRCRAFT SYSTEMS
CONTRIBUTION TO SYSTEM GAINS

SYSTEM	SMIC	NBR OF DOCUMENTS	DOLLAR VALUE
A4	DA	2325	14,514,969
		2325	14,514,969
A6	DZ	39	131,828
	FA	2148	21,763,387
	RA	829	18,510,188
	TF	59	367,160
	TY	199	32,923,766
		3274	73,696,329
EA6	FE	985	19,148,997
	GE	194	6,716,841
	XE	175	2,198,873
	LA	278	10,527,159
		1632	38,591,870
A7	AQ	60	295,127
	GA	1660	11,040,878
	QN	311	1,884,823
	TA	1150	19,129,487
	UA	62	472,500
		3243	32,822,815
AV8	KA	98	1,255,727
	UN	332	16,958,597
	SR	1009	27,775,674
		1439	45,989,998
C130	GZ	43	610,626
	LC	1452	8,138,592
	LZ	164	2,197,541
	RZ	49	632,602
		1708	11,579,361
C-2/E-2	BE	830	9,565,082
	EE	963	18,799,434
	PE	3	5,642
	XC	53	999,425
		1849	29,369,583

F4	AY	409	7,872,770
	BF	515	2,668,101
	MF	1661	21,408,584
	NN	247	2,088,773
		2832	34,038,228
F14	CY	562	18,809,810
	PF	2360	33,778,962
	PQ	885	37,643,377
	XN	1	15,420
		3808	90,247,569
F/A18	GF	1850	25,201,966
	SF	1748	65,845,342
	TN	394	6,841,391
		3992	97,888,699
H1	AH	1503	14,617,373
	NQ	379	1,955,493
		1882	16,572,866
H2	BH	1015	10,719,540
		1015	10,719,540
H3	DH	1515	15,970,410
		1515	15,970,410
H46	MH	2427	16,155,822
	WK	622	16,175,230
		3049	32,331,052
H53	LU	1689	20,116,058
	NU	2	14,000
	WH	19	34,570
	QH	1234	15,337,311
		2944	35,501,939
P3	BP	6368	31,144,928
	FP	3965	26,700,055
		10,333	57,844,983
EP3C	EP	223	1,129,140
		223	1,129,140
S3	CS	2387	43,014,985
	SN	140	2,195,861
		2527	45,210,846

SH60	VH	590	5,506,346
	XH	94	4,151,163
	XQ	163	2,689,652
		847	12,347,161
J52	EN	1788	42,490,100
		1788	42,490,100
T56	DQ	1332	4,314,952
		1332	4,314,952
T58	EQ	815	7,715,264
		815	7,715,264
GFE	FZ	5696	26,423,459
		5696	26,423,459
SPECIAL TOOLS	SX	873	16,288,361
		873	16,288,361
MISC		16,834	125,846,335
		16,834	125,846,335

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